

CLAIMS

1. An installed earth retaining system using sheet pile having integral retaining anchors comprising;
a plurality of interlocking sheet pile, the sheet pile having a first edge, a second edge, an exterior face and an interior face, the first and the second edge positioned along opposite edges of the sheet pile, wherein adjacent edges of adjoining sheet pile interlock to form a wall; and
at least one retaining anchor integral to the sheet pile, wherein the sheet pile provide resistance in a direction normal to the face of the pile and the retaining anchors provide resistance in a direction less than normal to the face wherein the retaining anchor increase soil resistance of the overall system.
2. The installed earth retaining system of claim 1 wherein the integral retaining anchor extends through the sheet pile such that the integral retaining anchor protrudes a selected distance away from the sheet pile on both the exterior and interior face of the sheet.
3. The installed earth retaining system of claim 1 wherein the retaining anchor is an angular device affixed to a side of the sheet.
4. The installed earth retaining system of claim 1 wherein the retaining anchor is positioned at the adjacent edge of interlocked sheets or formed integral with the sheet pile interlock during rolling.
5. The installed earth retaining system of claim 1 wherein the sheet pile and the retaining anchor are made of metal.
6. A micro soil anchor system integral with a sheet pile retaining wall comprising;

a first portion of a soil anchor positioned at a distal end of a first sheet pile; and
a second portion of a soil anchor positioned at a distal end of a second sheet pile positioned adjacent to the first sheet pile, the second portion of the soil anchor configured to receive the first portion of the soil anchor such that the first and second portion of the soil anchor couple together and form a soil anchor integral with interlocking sheet pile.

7. The micro soil anchor system of claim 6 wherein the first and second portion coupled together to form a soil anchor integral with the interlocked sheet pile have a width of greater than four inches.

8. A sheet pile for use in an retaining wall system comprising:
a sheet of rigid material for use as a soil retaining device, the sheet including a first side face and a second side face, a top edge, a bottom edge and a first and second side edges;
connection means along the first and the second side edges, the connection means coupling a first sheet to a second adjacent sheet; and
a protrusion extending from at least one of the first or second side faces of the sheet and integral therewith, wherein the protrusion extends from the first side and/or the second side a selected distance away from the face, the protrusion providing resistance to soil forces.

9. The sheet pile of claim 8 wherein the sheet and the protrusion are formed of a composite material.

10. The sheet pile of claim 8 wherein the protrusion extends contiguously through the sheet such that the protrusion extends a selected distance away from both the first side and the second side.

11. The sheet pile of claim 8 wherein the protrusion is an angular device affixed to a side of the sheet.

12. The sheet pile of claim 8 wherein the protrusion extends a full height of the sheet.

13. The sheet pile of claim 8 wherein the protrusion is formed immediately adjacent to the connection means and wherein the protrusion is approximately a squared end providing increased resistance to soil forces.

14. A method of designing and installing a soil retaining system with an open sheet pile cell structure having integral soil anchors comprising;
calculating soil strength parameters/stability analysis by taking into account material strength of sheet pile in combination with the resistance to loading provided by the integral soil anchors;

selecting sheet pile size and length based on a soil force calculation; and
installation of sheet pile to form a soil retaining system.